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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,373	06/05/2001	Wilhelm Reiter	033275-225	5771

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EXAMINER	
KIM, TAE JUN	

ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/873,373	REITER ET AL.	
	Examiner	Art Unit	
	Ted Kim	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-7,10-13,15-17,21,23,25 and 27-36* is/are pending in the application.

4a) Of the above claim(s) *4,6,7,11-13,17,21,25 and 27-29* is/are withdrawn from consideration.

5)☒ Claim(s) *32 and 35* is/are allowed.

6)☒ Claim(s) *2,3,5,10,15,16,23,30,33,34,36* is/are rejected.

7)☒ Claim(s) *31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/20/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2, 3, 5, 10, 15, 16, 23, 30, 33, 34, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al (6,253,554) in view of Bunker (5,611,197) and optionally Lee (5,498,133). Kobayashi et al teach a gas turbine system (note that there are many applicable embodiments, see Figs. 6 and 8 for the broadest applied embodiments) comprising a compressor 8 that compresses air to compressor end air that is available on the outlet side, a combustor, a turbine, first cooling lines 28 (see Fig. 6) in which process compressed air is removed from the compressor, is fed as cooling air for cooling inside an internal cooling channel 31a, 31b through thermally loaded components of the combustor and/or turbine, second cooling lines 32 from which cooling air from the components back to the compressor 8, wherein, in the manner of targeted leakage, a small part of the cooling air is fed for film cooling into the turbine stream through drilled film cooling openings provided on the components. The cooling air is returned via 32 to the compressor at an intermediate location and compressed and added to compressor end air 28, in analogous fashion to that disclosed by applicant in Figure 1. The air extracted in the first line 28 is additionally

cooled by means for cooling/cooler 16 prior to cooling turbine components. Kobayashi et al specifically teach the cooling system recovers only a part of the cooling air (col. 15, lines 48-col. 16, line 14), i.e. some of the cooling air is injected into the high pressure sections (compare with Fig. 7 for example). As is well known in the gas turbine cooling art, this is inherently film cooled. However, to avoid any ambiguity, Lee teach that the gas turbine blades are film cooled 40 at both upstream 22 and downstream 24 edges, the blades are either rotor blades or stationary (stator) blades (col. 2, lines 17-24). It would have been obvious to one of ordinary skill in the art to film cool the turbine components, as taught by Lee, as being the standard practice in the art and in keeping with Kobayashi's requirement for allowing leakage into the gas turbine stream, in order to maintain the cooling effectiveness. Kobayashi et al do not teach a cooler in the second cooling line. Bunker teaches taking compressor air in a first line 44B, cooling gas turbine component parts 20B and returning the cooling air in a second line 46B where a cooler 50 serves to cool the cooling air in the second line (see col. 5, lines 29+) and can be used to better match the temperature of the return air in the second line to that in the compressor. It would have been obvious to one of ordinary skill in the art to employ a cooler in the return line, in order to cool the return line and match the temperature of the cooling air to that within the compressor.

3. Claims 2, 3, 5, 10, 15, 16, 23, 30, 33, 34, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunker (5,611,197) in view of Kobayashi et al (6,253,554) and optionally Lee (5,498,133). Bunker teaches a gas turbine system comprising a compressor

12 that compresses air to compressor end air that is available on the outlet side, a combustor 20, a turbine 30, first cooling lines 44B in which process compressed air is removed from the compressor, is fed as cooling air for cooling inside an internal cooling channel through thermally loaded components of the combustor and/or turbine 30, second cooling lines 46B from which cooling air from the components back to the compressor 8, wherein, in the manner of targeted leakage, a small part of the cooling air is fed for film cooling into the turbine stream through drilled film cooling openings provided on the components. The cooling air is returned via 46B to the compressor at an intermediate location and compressed and added to compressor end air 12B, in analogous fashion to that disclosed by applicant in Figure 1. The air extracted in the first line 28 is additionally cooled by cooler 16 prior to cooling turbine components. Bunker specifically teaches the cooling system can include a conventional open-circuit (film cooled) and another local circuit joined into the closed circuit 42 (see col. 4, lines 12-31). Accordingly as the conventional open circuit is film cooled (col. 3, lines 19+), it is clear that Bunker teaches a targeted leakage with film cooling as well as a closed cycle is specifically taught. Bunker does not teach the first cooling lines are cooled by a cooler. Kobayashi et al teach a cooler 16 in the first cooling line with targeted leakage is old and well known in the gas turbine cooling art for enhancing the cooling effectiveness prior to cooling the hot turbine blades. It would have been obvious to one of ordinary skill in the art to employ a cooler in the first line for enhancing the cooling effectiveness prior to cooling the hot turbine blades. As for the location of the drilled film openings these are taught by Lee. It would have been obvious to one of ordinary skill in the

art to employ the drilled film openings on the leading edges and/or the trailing edges as the conventional practice in the art.

Allowable Subject Matter

4. Claims 32, 35 are allowed.

5. Claim 31 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. This application contains non elected claims drawn to an invention nonelected with traverse in the Paper of 02/06/2003. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Response to Arguments

7. Applicant's arguments filed 09/20/2004 have been fully considered but they are not persuasive. Applicant's arguments concerning the combination of Bunker and Kobayashi are directed to the fact the Bunker does not have targeted leakage in the cooling components for film cooling and Kobayashi does not have the cooler in the second cooling line that is returned to the compressor reasoning that the combination would still result in only one cooling step. This reasoning is not persuasive if only one cooling step were desired, no combination would have been necessary. Bunker teaches the cooler in the second cooling line so that the temperature of the gases that have cooled the high temperature components can be cooled to better match the temperature of the gases in the compressor (see col. 5,

lines 29+). As for applicant's arguments regarding the statement that "there is nothing in the art of record that would prohibit the further cooling in the second cooling line, especially when considered in light of the teachings of Bunker," applicant argues that this is not sufficient to establish a *primae facie* case of obviousness. Applicant appears to be missing the point of the Examiner's position. The point being that in view of the express teaching/motivation suggested by Bunker, there is nothing in the art of record teaching away from making the combination. The reason for making the combination is not due to lack of any secondary considerations teaching away, but due to the motivating technical reasons expressed by Bunker for the cooling in the return line.

8. Applicant's amendment necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 703-872-9306 for Regular faxes and 703-872-9306 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler, can be reached on 571-272-4834.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861. General inquiries can also be directed to the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at http://www.uspto.gov/main/patents.htm

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